

**PAWSEY MEDAL 1975**  
**RODNEY JAMES BAXTER**

The 1975 Pawsey Medal is awarded to Dr Rodney James Baxter, Professorial Fellow, Department of Theoretical Physics at the ANU, for his contribution to exactly soluble models in statistical mechanics, which are important as providing precise theoretical examples of phase transitions and critical phenomena.

Baxter has received international recognition for the solution of several models with particles arranged on two-dimensional lattices. His eight vertex model contains as special cases the square lattice Ising model, the dimer, ice, F and KDP models. In further work the Ising model with interaction between three neighbouring spins on a triangular lattice was solved. The solutions show how the critical exponents depend on the details of the interactions between particles, in contrast to the commonly held hypothesis that critical exponents depend only on the dimensionality and symmetry of the model. The magnetization and polarization of the models were also calculated.

Baxter's earlier work included an exact solution of the one-dimensional Coulomb plasma and some new relations between distribution functions. He made a considerable contribution to the Percus-Yevick theory of real gases, by showing how a phase transition, similar to that of a Van der Waals gas, arises in that theory.

More recently, Baxter has completed an exact calculation of the three spin order parameter for the Ising model on a triangular lattice.